**THE PAST**
GUTS AND GLORY

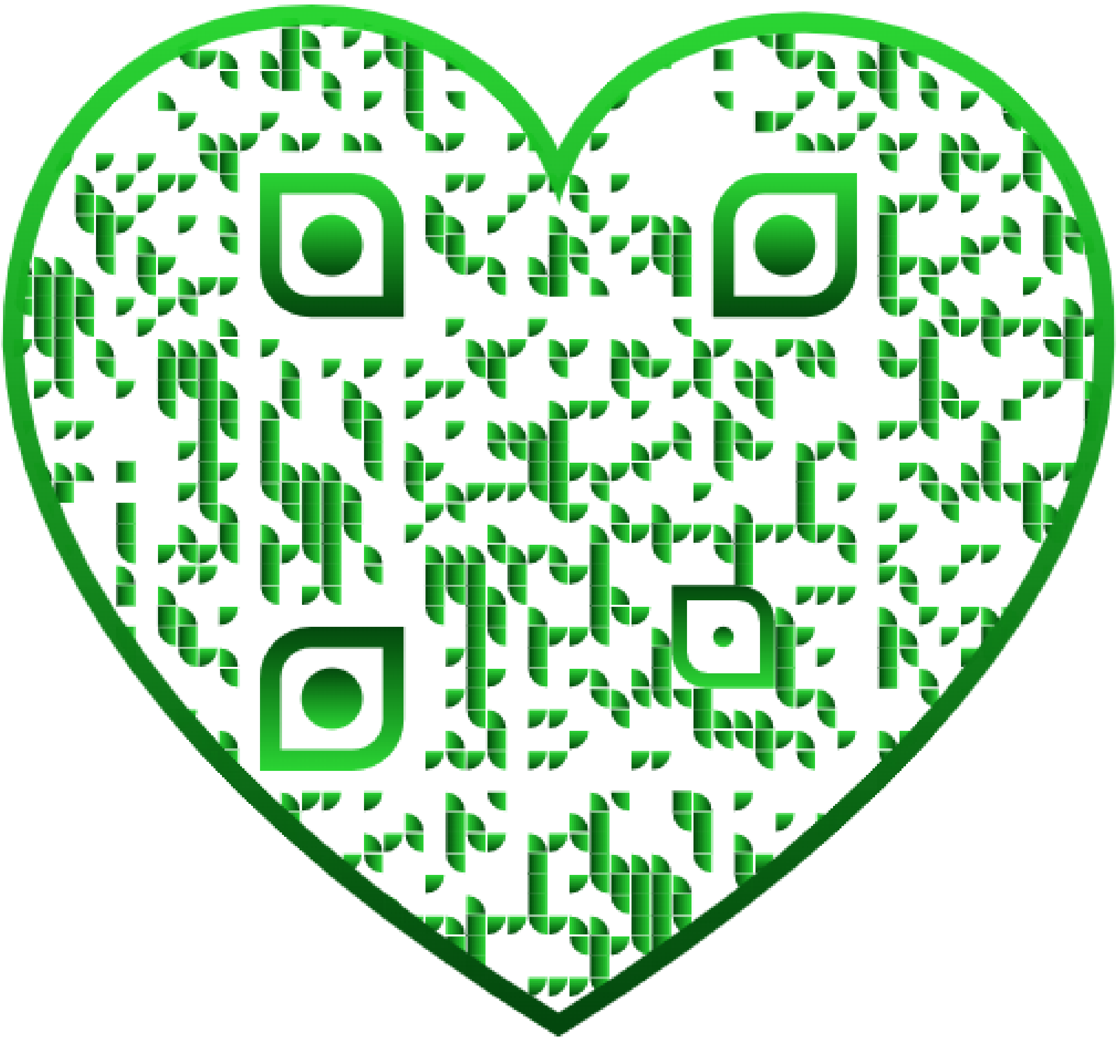
# AMERICAN

**THE FUTURE**
TECHNOLOGY AND INNOVATION

# FIGHTER JETS

a360media Specials C /
McClatchy Entertainment Specials

Display Until 08/04/2025 $14.99 U.S./$17.99 CAN



# AMERICAN

# FIGHTER JETS

# CONTENTS

413410
LOU IV
E2
C

**EVOLUTION OF THE FIGHTER JET**
These aircraft have advanced over the generations, flying faster, higher, and smarter
*6*

**THE FIRST GENERATION**
From the Me 262 to the F-86 Sabre, a look back at some of the world's earliest fighter jets
*8*

**THE SECOND GENERATION**
These jets were faster, powerful and more advanced than the ones that came before
*18*

**THE THIRD GENERATION**
Planes like the F-4 Phantom II and Lockheed YF-12 were made for maneuverability
*28*

**THE FOURTH GENERATION**
The F-15 Eagle, F-117 Nighthawk, and other jets were built for a multitude of missions
*38*

NAVY
SKYRAY

05
**THE FIFTH GENERATION**
These are the most advanced fighter jets operating across the skies at the moment
*48*

06
**THE FUTURE**
Exploring some of the features of sixth-generation fighter jets and beyond
*58*

07
**AMERICAN HEROES**
Earhart, Yeager, Lindbergh: These are some of the greatest pioneers in U.S. aviation
*68*

08
**WHAT'S IN A NAME?**
Blackbird? Tomcat? Harrier? Can you identify these fighters by their nicknames?
*78*

09
**FLIGHTS OF FANTASY**
Hollywood tales involving fighter jets often take liberties in their portrayals
*88*

# EVOLUTION OF THE FIGHTER JET

## THESE AIRCRAFT HAVE ADVANCED OVER THE GENERATIONS, FLYING FASTER, HIGHER, AND SMARTER

From the 1940s to present day, fighter jets have defined the technological limits of their era. The jet engine unlocked incredible performance, allowing fighters to pierce the sound barrier, carry payloads once reserved for heavy bombers, and soar to the edge of space. How well do you know the history, capabilities, and myths surrounding these remarkable machines?

In the following pages, we explore how advances in U.S. fighter jet production have led to breakthroughs not only in aerial combat but in flight technology as a whole. The earliest generation of fighter jets during World War II and the Korean War set the standard.

The second generation of fighters took on new challenges, including the Cuban Missile Crisis, the Vietnam War, and the Cold War. These planes required new features for new styles of combat, and required efficient mass production with allied nations in mind.

The third generation of fighter jets focused on maneuverability. This newfound agility created an updated breed of jets and fighting style. New tactics and techniques were required to dominate air space. Enter: TOP GUN. (The real one.)

Fourth generation jets were all about versatility. One plane, many missions. Being able to adapt to unpredictable combat zones on the fly became tantamount to success in the skies.

As of right now, the United States sits well-positioned at the top of the fifth-generation aircraft movement. But it definitely won't sit still. Other nations are constantly developing newer, faster, and smarter aircraft. The budgets continue to increase with the advancements. As they grow, a sixth generation of fighter jets looms in the near future.

Taking a closer look at each of the major developmental stages of American fighter jets ultimately traces the history of modern aerial engineering. The race to build the most dynamic and efficient jets has resulted in, and will continue to influence, the most important technological advancements of the 20th and 21st centuries.

200
200
200

15
10
5
58480
-5
-10
-15

The U.S. Army Air Forces' new Lockheed P-80B jet-propelled fighter plane takes flight in California.

# THE FIRST GENERATION

### A LOOK BACK AT SOME OF THE WORLD'S EARLIEST FIGHTER JETS

711

# *WHAT WAS THE FIRST OPERATIONAL FIGHTER JET?*

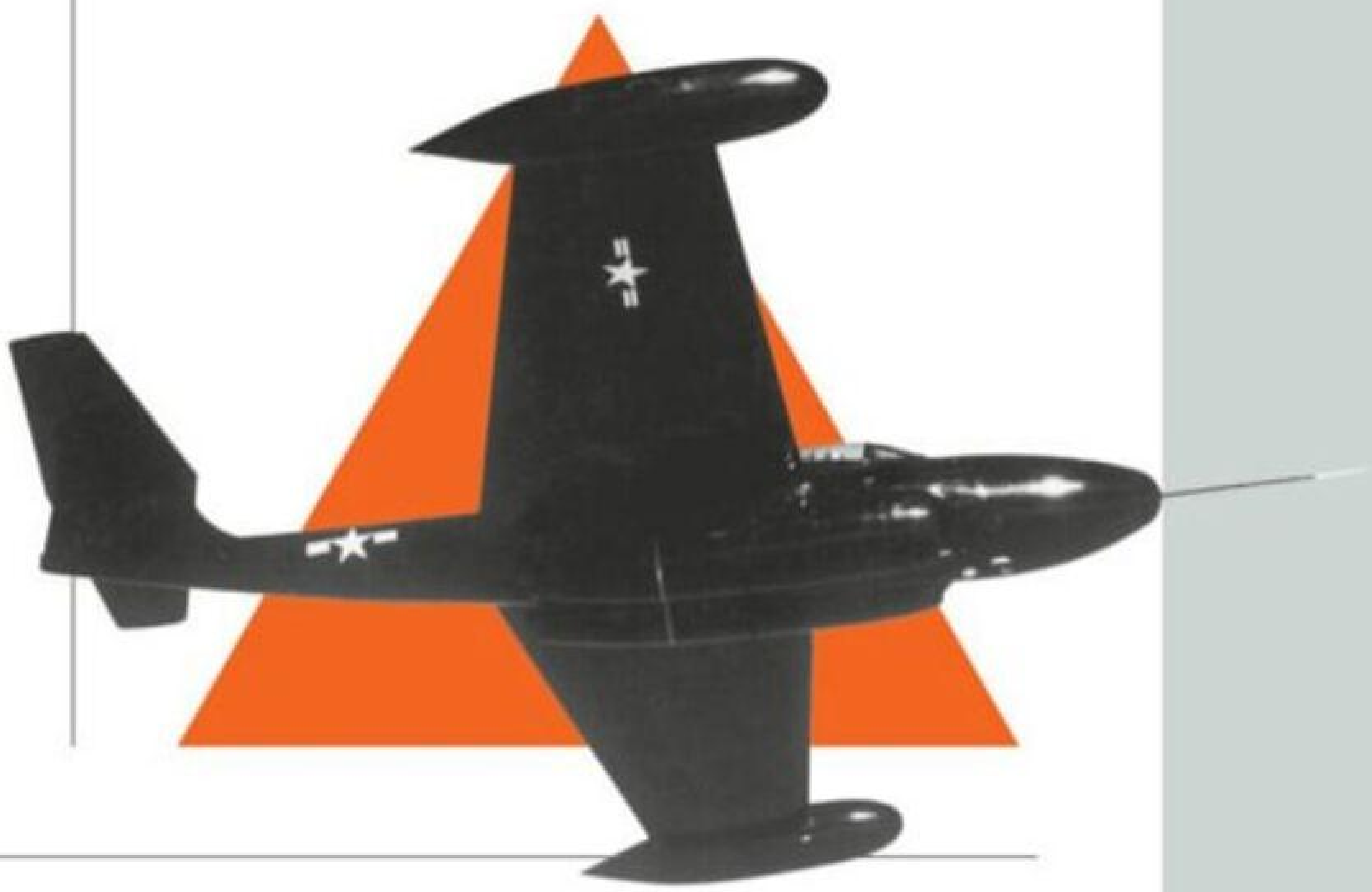
*The **Messerschmitt Me 262 (Schwalbe)** first flew under jet power in July 1942. The jet flew much faster than conventional airplanes. Germany's air force exercised caution in developing the Messerschmitt design so it took two more years before the Me 262 became the first jet plane used in combat, attacking a British photo reconnaissance plane flying over Munich. Of the more than 1,400 Me 262's made, less than 300 saw combat.*

## 2. WHAT WAS AMERICA'S FIRST FIGHTER-INTERCEPTOR TO CARRY NUCLEAR ARMAMENT?

The **Northrop F-89 Scorpion**. In July 1957, an F-89J fired a test rocket with a nuclear warhead that detonated over Nevada. It was the first launch of its kind. Northrop converted 350 F-89Js powered by two Allison J35 engines capable of producing 7,200 lbs. of thrust, delivering a cruising speed of 465 mph.

## 3. WHAT WAS THE PRIMARY ARMAMENT OF FIRST-GEN FIGHTER JETS?

**Machine guns**, **cannons**, **unguided missiles** and **rockets**. The guns were typically mounted on the nose or wings of the jet. The cannons were manually controlled and struggled with limited ammunition capacity due to space and technology constraints. The overall limitations resulted in inefficiencies in combat. Due to a lack of widespread radar tech, any weapons aboard a first-gen jet were limited to visual range engagements.



Left, from top to bottom: The German Messerschmitt Me 262 was the first operational fighter jet; American soldiers examine a damaged Me 262 in Germany in 1945. Above: The Northrop XF-89, a prototype of the F-89.

### **4. TRUE OR FALSE: FIRST-GEN JETS HAD GOOD ACCELERATION?**

**False**. First-gen fighter jets were significantly faster than contemporary piston-engine aircraft, but they generally lacked good acceleration. The still-developing technology resulted in a diminished thrust and slower acceleration, which in turn limited climb rates. Until more compact engines and sleeker design concepts arrived, the first-gen jets were still lacking in regards to combat needs.

## *WHAT WAS THE AIR FORCE'S FIRST SWEPT-WING FIGHTER JET?*

*The **F-86A Sabre**. The fighter jet's first flight was in October 1947, while the first production model flew in May 1948. In September 1948, the F-86A blew away the world speed record by reaching 670.9 mph. The Sabre became known for its ability to take down Russian-built MiG-15s, eventually shooting down 729 MiGs.*

A U.S. Air Force pilot stationed in Britain waits as an engineer refuels an F-86 Sabre fighter jet on June 28, 1952.

U.S. AIR FORCE
91181
FU-181
1351

269417
422609

## *WHAT WAS THE FIRST AMERICAN FIGHTER JET?*

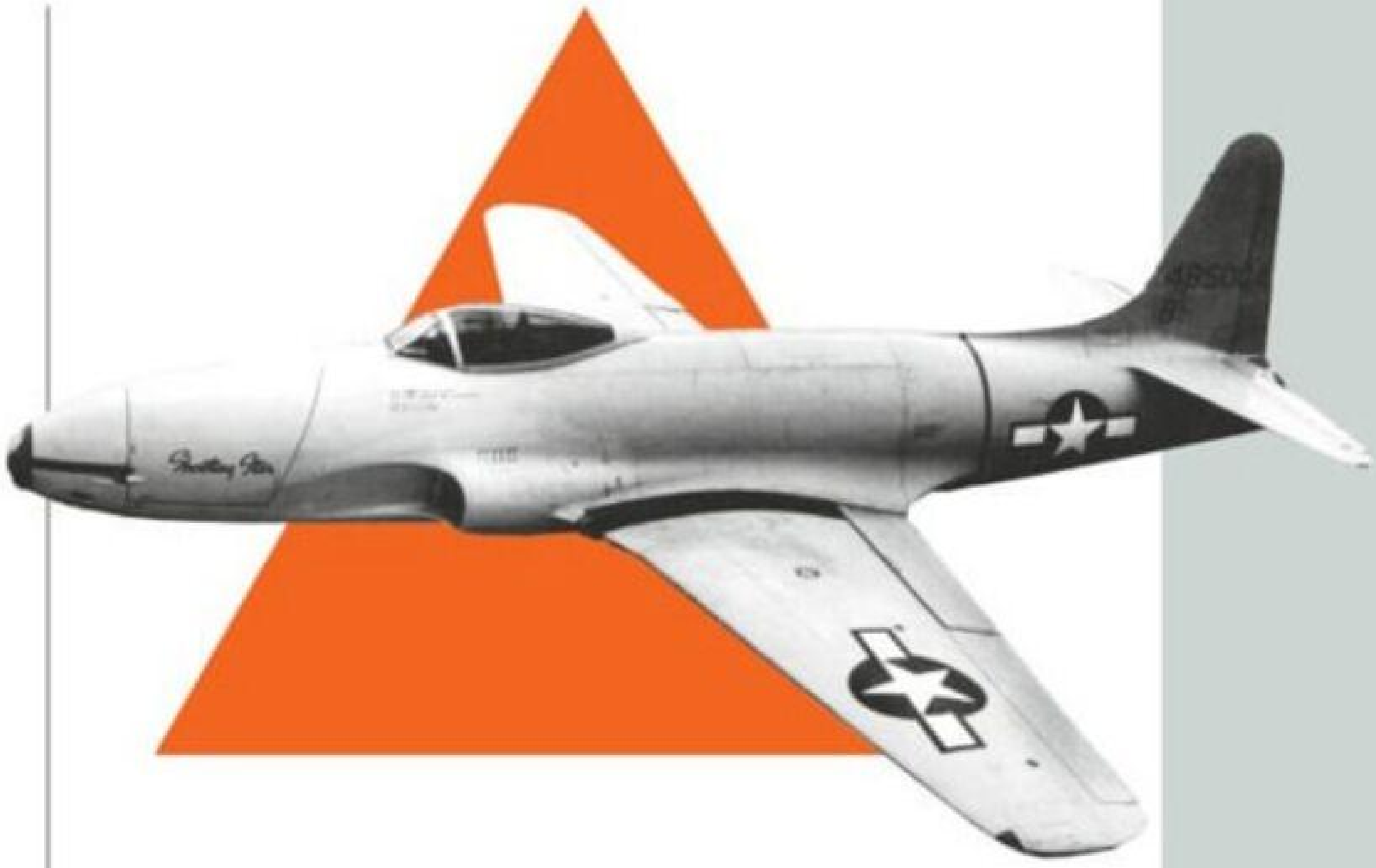
*The **Bell P-59 Airacomet** was the first fighter jet designed and built in America. Production took place during WWII under great secrecy. The plane's heavy airframe was too much for its low-thrust engines to power efficiently, and the P-59 never saw combat. The U.S. military studied the P-59 to develop more effective aircraft for the needs of their high-performance air team.*

### 7. NAME THE FIRST FIGHTER JET TO BE USED BY THE U.S. ARMY AIR FORCES.

The **Lockheed P-80 Shooting Star** was designed in just 143 days toward the end of World War II, but didn't see combat until the Korean War. The XP-80 was the prototype that evolved into the production model F-80. It was the first American jet to exceed speeds of 500 mph.

### 8. NAME THE AIR FORCE'S FIRST OPERATIONAL ALL-WEATHER INTERCEPTOR.

The **Lockheed F-94 Starfire**. The first prototype F-94, designed to operate in any weather conditions, day or night, successfully flew in July 1949. Soon, the F-94B and F-94C were upgraded with better fire control and navigation systems and a more reliable stabilizer. These versatile jets were deployed in the 1950s to protect the United States from Soviet bombers.



Left: The Airacomet (foreground) was the first fighter jet to be produced in the U.S. Above: The Lockheed P-80 Shooting Star, designed toward the end of WWII, was the first fighter jet used by the U.S. Army Air Forces.

CHAPTER 01

# WHAT WAS SPECIAL ABOUT THE P-51 MUSTANG?

*The P-51 stood out for its **sleek, aerodynamic build** and **maneuverability**, as well as its efficient engine cooling system that allowed for top speed and range. Reaching speeds up to 487 mph, they were low-altitude fighters, usually equipped with nose- and wing-mounted machine guns. The P-51 was integral to winning combat zones during WWII and the Korean War.*

Lt. William Simmons poses in front of his P-51 fighter jet somewhere in England during WWII.

ld Bill

15
10
5
-5
-10
-15

▲ The Grumman F11F/F-11 Tiger (pictured here) was the first American fighter jet to shoot itself down.

# 2

NAVY
NAVY
138606

# THE SECOND GENERATION

## THESE FIGHTER JETS WERE FASTER, POWERFUL, AND MORE ADVANCED

### 1. WHAT SECOND-GEN JET WAS NICKNAMED "FREEDOM FIGHTER"?

The **Northrop YF-5A** earned the nickname because the U.S. Air Force used more than 2,000 of these jets to assist allied nations around the world. The F-5 began flying in 1959, while training for foreign pilots began in 1964. The countries that learned on the F-5 included Iran, South Korea, Spain, and many other free nations. When the F-5As were used for combat trials in Vietnam, it was titled Skoshi Tiger ("Little Tiger").

## *WHAT WAS THE LOCKHEED U-2 USED FOR DURING THE CUBAN MISSILE CRISIS?*

***Photo reconnaissance**. The images obtained by the U-2 in October 1962 confirmed the presence of Soviet medium-range ballistic missiles. Missions like these played a big role in helping gain intelligence. The Air Force RF-101 and the Navy RF-8 were also used to provide surveillance photos over Cuba during this time.*

From top to bottom: A composite image of a Lockheed U-2 photo reconnaissance fighter jet; close-up of a Lockheed U-2 coming in to land.

RESCUE
DANGER

63224
63296
FW-312
U.S. AIR FORCE
AIR FORCE
EJECTION SEAT
RESCUE
AIR FORCE

03

## *NAME THE FIRST FIGHTER CAPABLE OF SUPERSONIC SPEED IN LEVEL FLIGHT.*

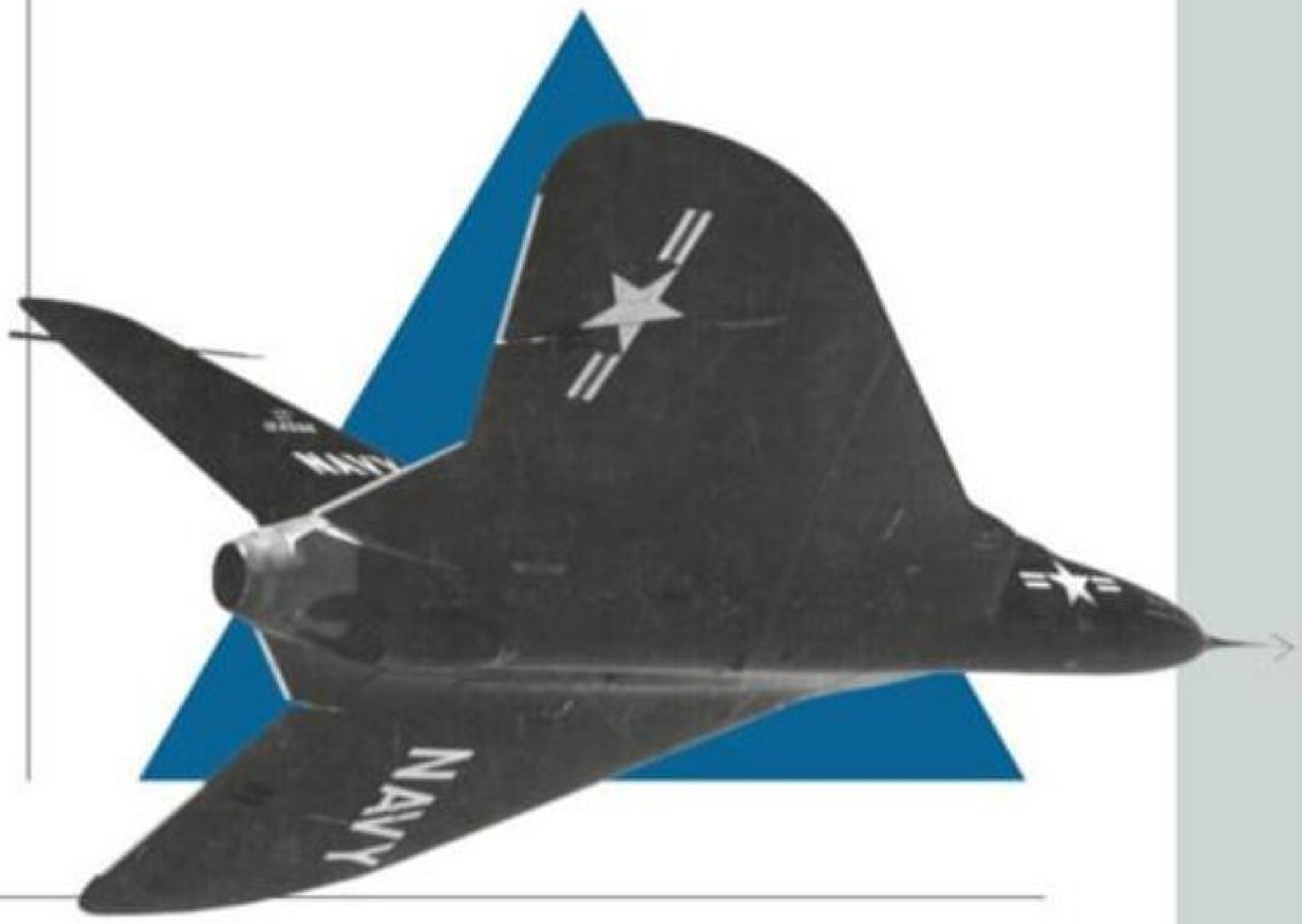
*The **North American F-100 Super Sabre**. The F-100 was developed as a follow-in to the F-86 used in the Korean War. Of the over 2,200 F-100s built, the D model was the most advanced and mass produced. The D model included the first-ever autopilot designed for a supersonic jet.*

### 4. NAME THE FIRST CARRIER-LAUNCHED AMERICAN AIRCRAFT TO HOLD THE WORLD'S ABSOLUTE SPEED RECORD.

On Oct. 3, 1953, the **Douglas F4D Skyray** became the first carrier-launched jet to set the world speed record by reaching 754.3 mph. U.S. Navy Lt. Cmdr. James Verdin piloted the jet for four passes over a 3 km course to set the record. It was the first U.S. Navy/Marine Corps fighter to exceed Mach 1. Douglas Aircraft went on to produce 421 Skyrays during the 1950s.

### 5. WHAT IS CONSIDERED THE FIRST AMERICAN JET TO SHOOT ITSELF DOWN, IN 1956?

The **Grumman F11F/F-11 Tiger**. In September 1956, Navy test pilot Thomas Attridge Jr. took off from the Grumman airfield in Long Island, New York. After Attridge fired off his cannons, he accelerated while slightly changing the angle of his descent. The bullets slowed due to drag, so the plane caught up to the bullets. The jet was demolished, and Attridge had to execute a crash landing.



Left: More than 2,200 F-100s were built, with the Super Sabre making its debut during the Vietnam War.
Above: A Douglas Skyray in flight in 1953.

Above: The F-106 was capable of speeds up to Mach 2. Right, from top to bottom: The F-105 was eventually replaced by the McDonnell Douglas F-4 Phantom II; F-105s fly with a B-66 Destroyer in North Vietnam.

### 6. WHAT LONG-SERVING AMERICAN JET WENT OPERATIONAL IN 1959?

The **Convair F-106 Delta Dart** was the first truly next-gen bomber. It was the primary all-weather interceptor from the 1960s to the mid ’80s. Capable of speeds up to Mach 2, the Dart could carry a nuclear rocket and traditional Falcon missiles. The Air Force deployed the F-106 during much of the Cold War due to its efficiency in countering bomber aircraft at heights up to 70,000 feet.

### 7. WHAT WAS THE ONLY U.S. AIRCRAFT REMOVED FROM COMBAT DUE TO HIGH LOSS RATES?

The **Republic F-105 Thunderchief**, in 1983. The F-105 could reach Mach 2 and was an integral jet in the strike bombing missions during the early years of the Vietnam War, but 382 Thunderchiefs were lost, almost half of all produced. The Air Force used F-105s exclusively in the Rolling Thunder air campaign against North Vietnam.

## *HOW MUCH DID THE THUNDERCHIEF WEIGH?*

*When the Republic F-105 Thunderchief entered service, it weighed in at* ***50,000 lbs.****, making it the largest single-seat, single-engine combat aircraft in history. It could carry up to 14,000 lbs. of weapons and ammunition and was notable for its large bomb bay. Despite its remarkable size, the F-105 could still pass Mach 2 at altitude. It was commonly known as “Thud.”*

24415
U.S. AIR FORCE
USAF

USAF
USAF

U.S. AIR FORCE
LOCKHEED
STARFIGHTER F-104A

# *WHAT JET WAS CALLED A "MISSILE WITH A MAN IN IT"?*

*The* ***Lockheed F-104 Starfighter*** *received this nickname due to its extended and narrow fuselage combined with its short wings. It was the first U.S. fighter jet in service to fly Mach 2 and became the first jet to simultaneously hold world records for speed, altitude, and time-to-climb. More than 1,700 F-104s were built in the U.S. and abroad under the military aid program.*

A Lockheed chief engineering test pilot checks the nose of an F-104 Starfighter.

The Lockheed YF-12 was developed in the 1960s to defend against supersonic bombers.

# 3

U.S. AIR FORCE

# THE THIRD GENERATION

## PLANES THAT WERE MADE FOR MANEUVERABILITY

CAUTION
CAUTION
WARNING
RESCUE
OPPOSITE SIDE
PILOT LCDR R.CARLQUIST
R/O LT L.B. NOFZIGER
P/C R.W. HARRIS AMI
JET
DANGER
INTAKE

# NAME THE MOST-PRODUCED AMERICAN SUPERSONIC FIGHTER JET IN HISTORY.

*The **McDonnell Douglas F-4 Phantom II**. The twin-engine, all-weather fighter was designed with a new style of war on the horizon. The advanced features, including updated radar and missile features, created a jet that could thrive in air and ground combat scenarios. F-4 production spanned decades and the jet played a prominent role in the Vietnam War, the Cold War, and even the Gulf War.*

## 2. TRUE OR FALSE: THE F-4 WAS USED BY THE U.S. AIR FORCE, NAVY, AND MARINE CORPS IN VIETNAM.

**True**. The F-4 Phantom II was versatile enough to serve three U.S. military branches, and 12 other nations. The F-4 began as an attack plane used to seize control of enemy airspace and eventually proved useful for ground attacks and reconnaissance missions.

## 3. HOW MANY IN-FLIGHT WORLD RECORDS DID THE F-4 HOLD?

Across speed, altitude, and time-to-climb, the F-4 Phantom II held **16 world records**. In 1959, the prototype set the world altitude record at 98,556 feet. In 1961, the F-4 set a world speed record for 1,604 mph on a 15-mile circuit. It also set a new time–to-climb mark in climbing 9,000 feet in 34.5 seconds.

U.S. AIR FORCE

Left: The U.S. Navy displays the McDonnell Douglas F-4 Phantom II—which included updated radar and missile features—in a parade. Above: The F-4 Phantom II was one of the Air Force's primary front line fighters.

### 4. JIM IRWIN WAS A YF-12 DEVELOPMENTAL TEST PILOT. WHAT ELSE DID HE DO?

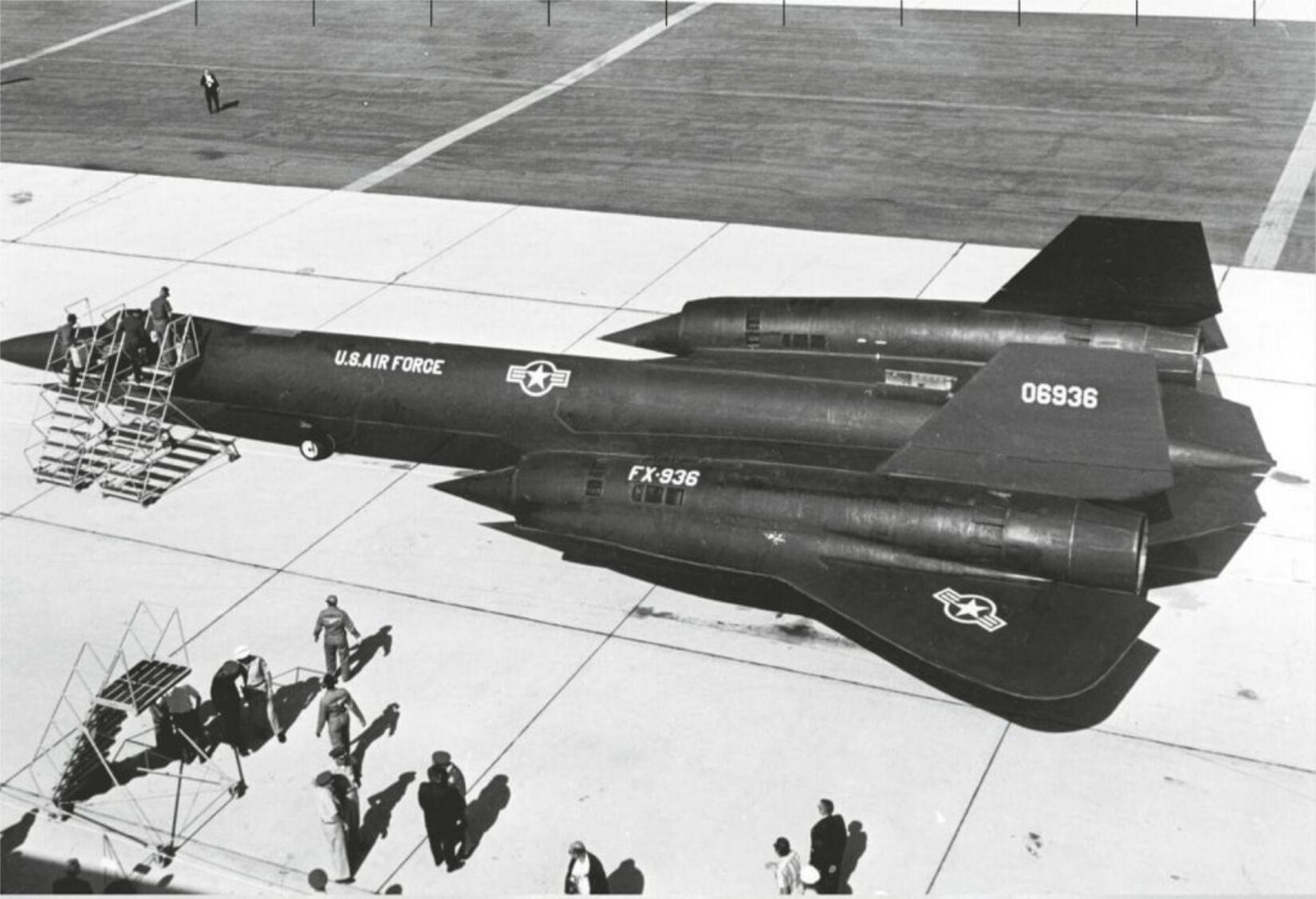
James “Jim” Irwin was an Air Force colonel with over 5,300 hours of jet aircraft flying time. In addition to being a YF-12 developmental test pilot, **he was also the eighth person to walk on the moon** as a lunar module pilot for Apollo 15 in 1971. He was a recipient of both the NASA Distinguished Service Medal and the Air Force Distinguished Medal.

## *WHAT 1960s U.S. JET WAS THE LARGEST, HEAVIEST, AND FASTEST CREWED INTERCEPTOR?*

*The **Lockheed YF-12A**. The jet was developed in the 1960s to defend against supersonic bombers. In 1965, the first and third YF-12s set world records for speed (2,070.101 mph) and altitude (80,257.65 feet). The jet laid the foundation for the SR-71.*

In 1965, test pilot Col. Robert L. Stephens and fire control officer Lt. Col. Daniel Andre set a speed record (2,070.101 mph) and altitude record (80,257.65 feet) in the YF-12A.

RESCUE


U.S.AIR FORCE
06936
FX-936

U.S.AIR FORCE

# *WHAT WAS THE RADAR SYSTEM ON THE YF-12?*

*The YF-12 featured the* ***Hughes AN/ASG-18 fire-control radar****, the U.S.'s first "look down–shoot down" radar. Installed in the aircraft's long nose, the pulse doppler radar gave the YF-12 the ability to locate and engage enemy aircraft at lower altitudes. Paired with an infrared search and track system, the YF-12 could lock on to one target while also searching the area for others.*

UNITED STATES NAVY
FIGHTER WEAPONS SCHOOL

## 7. WHAT IS THE U.S. NAVY FIGHTER WEAPONS SCHOOL MORE COMMONLY CALLED?

The Navy Strike Fighter Tactics Instructor program is a mouthful. Most people know it by a catchier name: **TOP GUN**. The program that inspired the movie launched in 1969, and the grueling course load focuses on advanced aerial tactics, producing graduate-level fighter pilots, adversary instructors, and air-intercept controllers.

## 8. WHAT IS A "WILD WEASEL"?

It was **a name for any specialized U.S Air Force crew or aircraft that targeted opposition air defense**. The first Vietnam mission to destroy opposition Surface-to-Air Missiles in 1965 was called Project Wild Weasel. The name stuck. Wild Weasels would typically fly in ahead of strike forces and stayed in the air space until the strike force had evacuated, keeping themselves in between the enemy and the strike force at all times.

---

Left, from top to bottom: The YF-12A prepares for flight on Sept. 30, 1964; aeronautical engineer and designer Kelly Johnson, of Lockheed, signs an autograph for the son of a YF-12A crewman.

CHAPTER 03

# WHY WAS THE NAVY FIGHTER WEAPONS SCHOOL OPENED?

*The Navy commissioned a report to assess fighter jet performance in the Vietnam War. Naval officer Frank Ault's study discovered performance issues and made suggestions on the core causes to address.* ***American pilots needed to learn advanced fighter jet tactics*** *to deal with a more agile opponent.*

A U.S. Air Force F-4C Phantom II fighter jet prepares to refuel in mid-air.

37656
U.S. AIR FORCE
FJ-656

15
10
5
-5
-10
-15
City of Fort Smith
188
NO STEP

The A-10 Thunderbolt II conducts a training mission over Fort Chaffee Joint Maneuver Training Center

4
ARKANSAS
FS
188 FW
FLYING
RAZORBACKS
NO STEP

# THE FOURTH GENERATION

## BUILT TO HANDLE A MULTITUDE OF MISSIONS

### 1. NAME THE FIRST U.S. AIR FORCE FIGHTERS TO HAVE AN ENGINE THRUST GREATER THAN THE NORMAL WEIGHT OF THE CRAFT.

The **McDonnell Douglas F-15A Eagle**. The Eagle's impressive power combines with its light weight to create the type of agile fighter necessary to gain and hold air space in combat. It debuted in 1972 and has produced single- and double-seat builds.

### 2. WHAT IS SPECIAL ABOUT THE F-15'S ENGINE THRUST?

The F-15's unique engine thrust-to-weight ratio **allows it to accelerate straight up into a vertical climb**. The Eagle can essentially sit on its tail in the air before accelerating at supersonic speed. The unique ability results in a jet that can reach 98,000 feet in less than three and a half minutes.

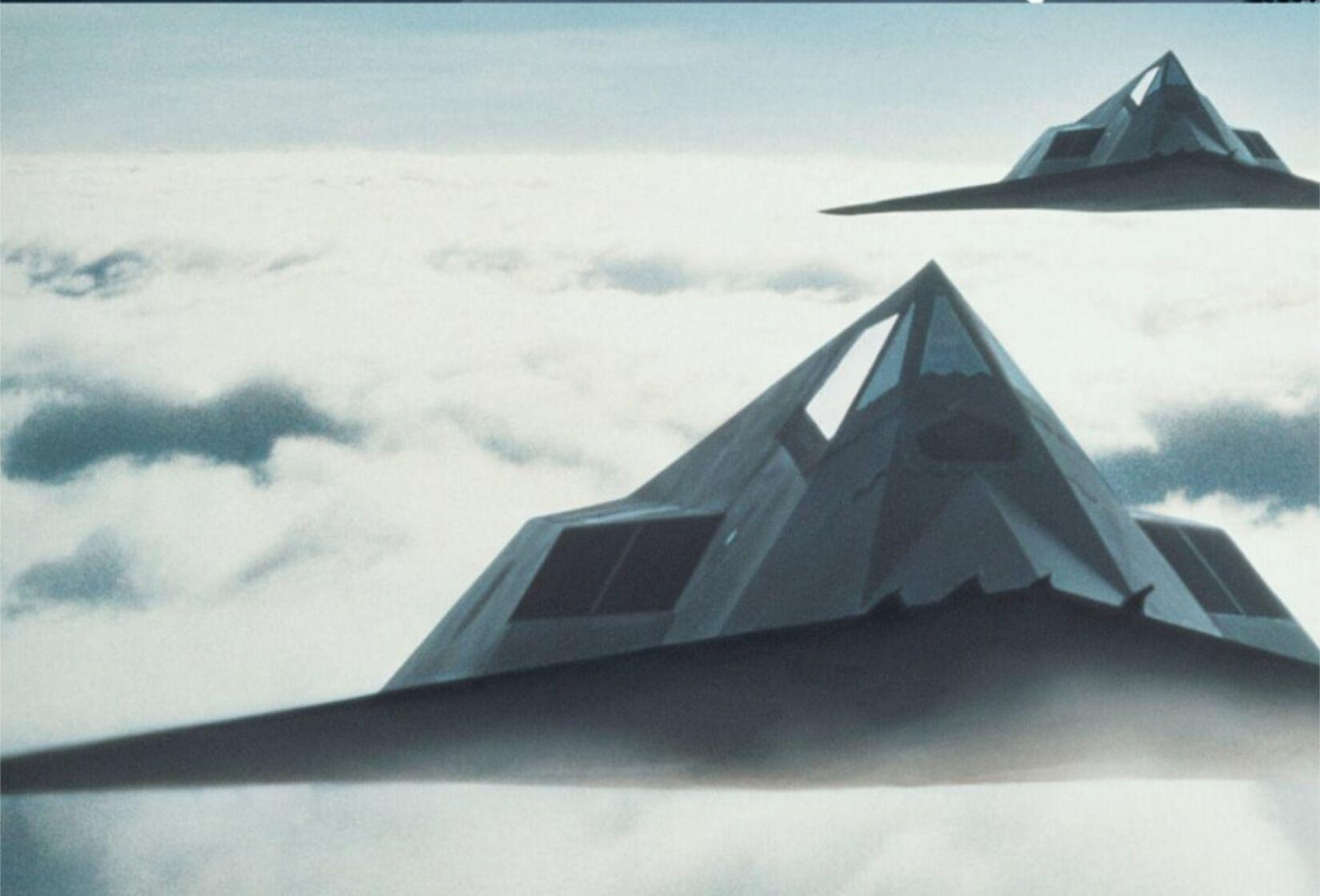
## *WHAT IS THE F-15'S AERIAL COMBAT RECORD?*

*The F-15 Eagle is **undefeated in combat**. The powerful jet has tallied over 100 victories without ever being shot down. The Eagle always came out on top during dogfights throughout the Gulf War during Operation Desert Shield and the Yemen Civil War. In 1985, an F-15 made history by destroying a satellite named Solwind P78-1.*

Above: The F-15 Eagle can accelerate straight up into a vertical climb and reach 98,000 feet in less than three and a half minutes. Right: The F-15E Strike Eagle is an all-weather, dual-role fighter.

MO
AF 328

COL AL WHITLEY



## 04

# NAME THE FIRST OPERATIONAL FIGHTER WITH STEALTH TECHNOLOGY.

*The* ***Lockheed F-117 Nighthawk****. The F-117's first flight was in 1981, and it became operational by 1983. The jet's shape was designed to reflect radar waves, while its panels were reinforced by an external layer of radar-absorbent material. It was practically invisible in the air.*

Development of the F-117 took place under intense secrecy. The jet wasn't even seen publicly until 1990.

### 5. WHAT DOES “FLY BY WIRE” MEAN?

Fly-by-wire (FBW) means **an aircraft operates by using semi-automatic computer-regulated flight control, replacing the mechanical flight controls with an electronic interface**. FBW systems enable safer, more efficient flight. A pilot inputs flight controls, which the computer system then reads and converts into signals. The jet’s computer system collects that data and then translates those signals to adjust the flight’s control surfaces.

006

## *WHAT AIRCRAFT HAS BEEN CONSIDERED THE “BACKBONE OF THE AIR FORCE”?*

*The **F-16 Fighting Falcon**. The multirole fighter excels as an air superiority fighter that can take on multiple enemies. The F-16 thrives in dogfights and serves as the standard to challenge new models of dogfighting jets. The F-16 entered service in 1979 with the U.S. Air Force and is still flown today by the U.S. and 25 other allied nations.*

The F-16 Fighting Falcon is a multirole fighter that entered service in 1979 with the U.S. Air Force, and is still flown today.

10963
963
963

956
MASSE ICI
GROUND HERE
EARTH TERRE

07

## *WHAT FOURTH-GEN FIGHTER IS KNOWN AS THE "WARTHOG"?*

*The **Fairchild Republic A-10 Thunderbolt II** earned this nickname due to its aggressive physical appearance. The A-10 is highlighted by its calling card: the GAU-8/A Avenger 30mm Gatling gun jutting out from under its nose. The gun resembles the tusks of a warthog. Many A-10s are painted with various snarling animal fangs.*

### 8. WHAT IS "SUPER-CRUISE"?

Supercruise is **sustained flight at supersonic speeds without the use of afterburners**. It's a highly useful function for a fighter jet to have at its disposal because it means the jet will burn less fuel and sustain higher speeds for longer periods of time. An example of a U.S. military jet with supercruise is the F-22 Raptor, which is considered to be the first fifth-generation fighter jet to reach service.

### 9. WHAT IS A "MULTIROLE COMBAT AIRCRAFT"?

A multirole combat aircraft (MRCA) is **a military airplane designed with the capability to perform more than one specific role in combat**. MRCAs perform a variety of tasks, including air-to-air combat with enemy jets, attacking ground-based targets with bombs or missiles, strategic bombing, aerial reconnaissance to track enemy troops and buildings, and more. The F-4 Phantom II was the primary MRCA in the U.S. Air Force in the 1960s and '70s.

Left, top and bottom: The A-10 Thunderbolt II earned the nickname "Warthog" due to its aggressive appearance. Above: The F-22 Raptor has supercruise capabilities.

15
10
5
-5
-10
-15
100
LOCKHEED MARTIN
BAE SYSTEMS
NORTHROP GRUMMAN
NAVY

▲ The F-35C conducts a test flight on Feb. 11, 2011, over the Chesapeake Bay in Maryland.

# THE FIFTH GENERATION

## THESE ARE THE MOST ADVANCED FIGHTERS IN OPERATION TODAY

## *WHAT FIGHTER IS CONSIDERED A CORNERSTONE OF THE AIR FORCE'S FIFTH-GEN FLEET?*

*The **F-22 Raptor**. It boasts the pinnacle of fifth-gen fighter features: stealth, supercruise, maneuverability, avionics, and more. The jet's advanced sensor suite can detect, locate, and shoot enemies before being detected, and the engines on the F-22 are more powerful than any other in flight right now.*

### 2. WHAT MAKES A FIGHTER "FIFTH GENERATION"?

**Stealth, speed, and network capabilities**. A combination of difficult-to-detect shape and radar-absorbent materials make fifth-gen jets almost invisible to enemy radar. Engines capable of achieving supercruise lead to more efficient flights that can sustain longer bursts of combat speed. Fifth-gen network capabilities include real-time data sharing and collaborative targeting to help pilots better understand their surroundings in combat.

### 3. WHAT ARE THE THREE WAYS THE LOCKHEED MARTIN F-35 LIGHTNING II CAN TAKE OFF AND LAND?

The F-35A **takes off and lands on conventional runways**. The F-35B is the first-ever supersonic stealth aircraft with **short takeoff and vertical landing capabilities**. The F-35C was designed exclusively for aircraft carrier operations and can perform all necessary functions for **catapult-assisted takeoff but arrested recovery**.

Left: The F-22 Raptor's advanced flight controls and thrust vectoring give pilots a level of maneuverability that no other jet can match currently. Above: The F-35B Lightning II fifth-gen multirole combat fighter.

### 4. IS THE F-35 A SUPERCRUISER?

**No**. Despite its many market-setting qualities, the F-35 is not a supercruiser. It can fly greater than the speed of sound, but can't sustain it without afterburners. However, the F-35 has flown at Mach 1.2 for 150 miles with afterburners. The jet's F135 engine features more than 40,000 lbs. of thrust and contains stealth capabilities far superior to fourth-gen engines.

## *HOW MANY F-35s DOES THE U.S. PLAN TO PURCHASE THROUGH 2044?*

*The plan is to acquire **2,470 F-35 aircraft and engines** in three builds: F-35A for the Air Force, F-35B for the Marine Corps, and F-35C for both the Navy and Marine Corps. Meanwhile, the F-35 will continue to seek and implement hardware and software upgrades to counter future threats to America's armed forces.*

Top and bottom: Although the F-35 is not a supercruiser, it has flown at Mach 1.2 for 150 miles with afterburners.

NG

# *WHAT CAN HOLD MORE FUEL: AN F-16 OR AN F-35?*

*An **F-35** can hold more than twice the internal fuel of an F-16. The F-35 handles over 18,000 lbs. of fuel, while the F-16 tops out at 7,000, needing two external tanks to reach 12,000. Better fuel capacity leads directly to a jet's operational range and endurance.*

---

### 7. WHAT IS THE ESTIMATED COST TO TAXPAYERS OF DEVELOPING THE F-35?

Production of the F-35 is now projected to cost taxpayers **over $2 trillion** during the course of the Department of Defense's program developing, updating, and assembling the jet. It's the most expensive aircraft program in history. The DOD plans to use the F-35 through 2088. Sustainment costs increased by 44% from 2018 to 2023, so spending will most likely rise.

### 8. AS OF EARLY 2025, WHAT COUNTRIES BESIDES THE U.S. WERE KNOWN TO HAVE FIFTH-GEN FIGHTER JETS?

**Turkey and China**. Turkey's KAAN and China's Chengdu J-20 are recognized as fifth-generation fighter jets, with the Shenyang J-35 also garnering attention as a second fifth-gen fighter out of China. Russia has been developing the Su-57 for years, but experts have yet to see it perform up to fifth-gen standards.

Left: The F-35 can hold more than twice the internal fuel of an F-16, handling over 18,000 lbs. of fuel. Above: Two Chinese-made Chengdu J-20 fighter jets fly in formation.

# *WHAT IS THRUST VECTORING?*

***When a jet's exhaust nozzles redirect airflow to impact the direction of flight**. The different exit angle of the exhaust allows the jet to make drastic shifts in direction not available to traditional aircraft. Sharp turns, full flips, or stopping on a dime are all possible with thrust vectoring and provide an advantage during combat, especially dogfights. Vertical takeoff and mid-air hovering are also capable with thrust vectoring.*

The F-22 Raptor has thrust vectoring capabilities, allowing it to make sharp turns and full flips.

▲ Advanced artificial intelligence could make unmanned flight possible for seventh-gen fighters.

501
NAVY
501
501

# THE FUTURE

## SIXTH-GENERATION FIGHTERS AND BEYOND

### 1. WHAT ARE BELIEVED TO BE THE FEATURES OF A SIXTH-GEN FIGHTER JET?

It's hard to pin down an agreed-upon definition of what a sixth-generation fighter jet would look like across the globe. Different features are prioritized depending on the region, but the general consensus seems to be a focus on **artificial intelligence, engine speed, and improved stealth capabilities**. One of the most sought-after features seems to be the flexibility to alternate between piloted, remote-controlled, or completely AI-piloted missions.

## *WHAT MIGHT A SEVENTH-GEN FIGHTER BE LIKE?*

*There are many different directions a seventh-generation fighter jet could go in. The most common expectations focus on **artificial intelligence and stealth capabilities**. Engineers expect a seventh-generation fighter jet to be completely impossible to track by even the most complex radar systems. Advanced AI would make it possible for the jets to fly in combat completely unmanned.*

Seventh-gen fighter features are speculative for now, but expect the fighter jet of the future to make full use of technological advancements.

## WHEN DOES AMERICA ANTICIPATE HAVING A SIXTH-GEN FIGHTER?

*The **2030s**. The Air Force and Naval Academy are on different timelines with different focuses. While the Air Force is developing adaptive-cycle jet engine tech, the Navy's next-gen jet will work with a derivative-type engine. Production for both will come down to tech solutions and budget.*

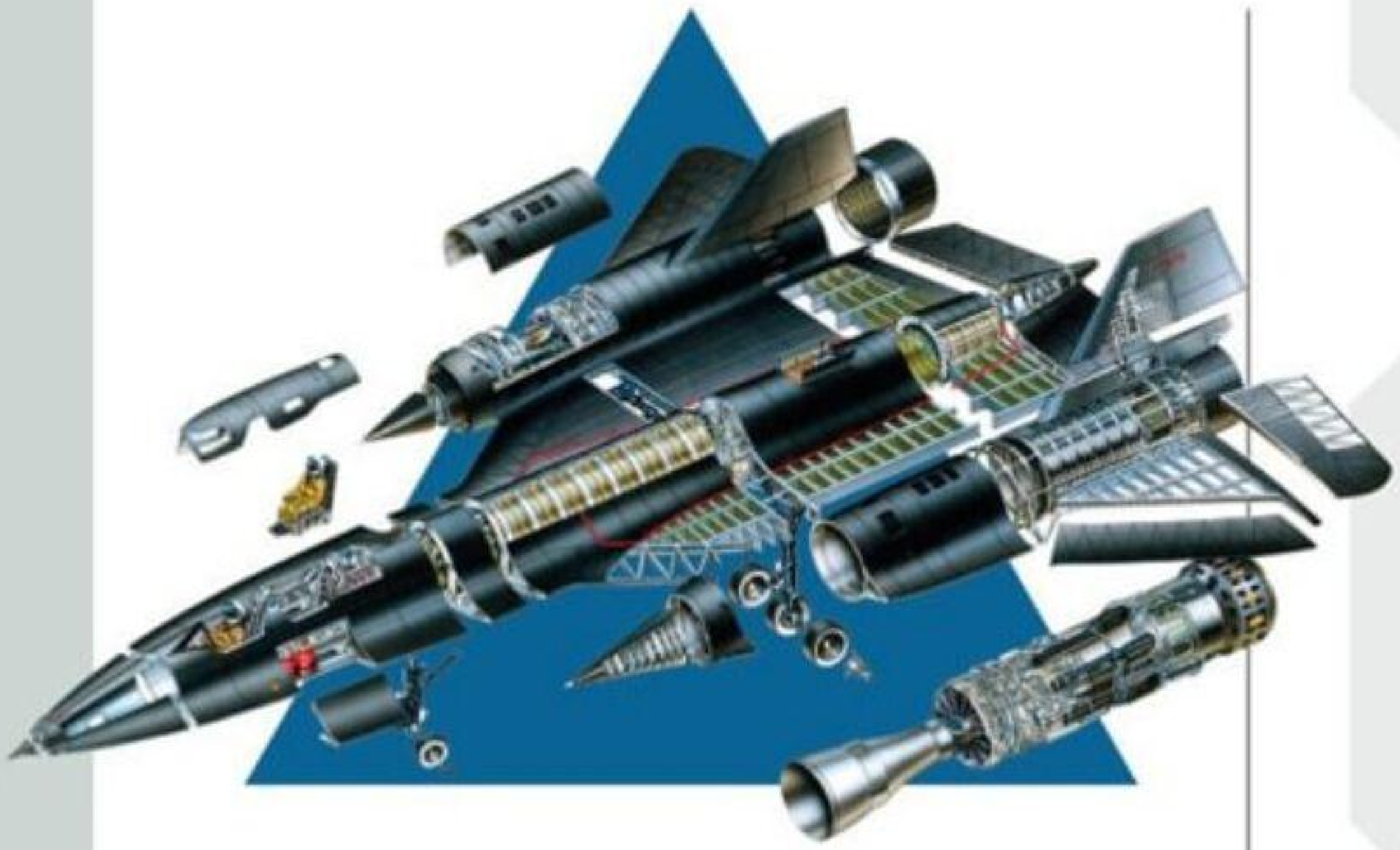
### 4. WHO WAS QUOTED AS SAYING, "THE CLOSEST MODERN EQUIVALENT TO THE HOMERIC HERO IS THE ACE FIGHTER PILOT"?

**British-American poet W.H. Auden**. He was looking to draw a comparison between the heroes of his day and the solitary figures, like Homer's Odysseus. The pilot needs to show great bravery against all odds and keep his cool to make the right decisions in the heat of battle to survive, much like Homer's protagonist.

### 5. WHAT IS THE J-36?

**China unveiled its sixth-gen fighter jet** in December 2024 over the Sichuan province of Southwestern China. Named the Chengdu J-36, the next-gen jet is powered by a unique three-engine design. Its large internal weapons bay looks like it might potentially be able to house air-to-air long-range missiles. Since the J-36 has yet to be officially acknowledged by the Chinese government, there are still more unknowns than knowns about the country's most modern fighter jet.

Left: When the F-22 became fully operational in 2005, the fifth-gen fighter jet was the most advanced of its time. The U.S. anticipates having sixth-gen fighters in the 2030s. Above: British-American poet W.H. Auden.



### **6.** WHAT ARE THE CHALLENGES OF FUTURE FIGHTER JET DEVELOPMENT?

It is about more than a race to the forefront of technological advancements in aerial engineering. The DOD and the different arms of the U.S. military have to come to terms with what features to emphasize as they assess development needs. Between **budgeting, research, and testing prototypes**, it usually takes multiple decades before a fighter jet is ready for combat.

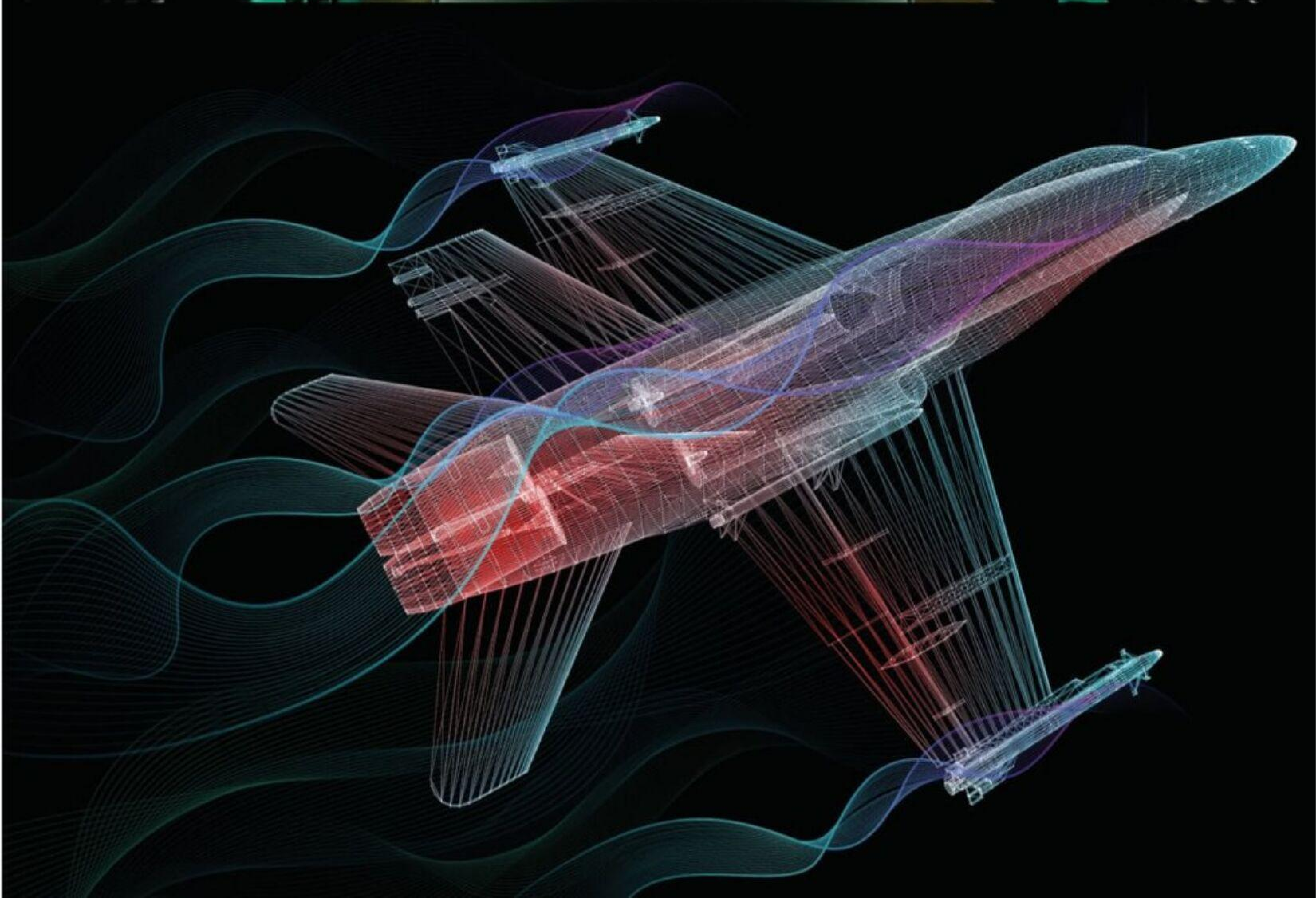
### **7.** WHY DO COUNTRIES PRIORITIZE ADVANCING FIGHTER JETS?

They see it as **the first key to success in establishing and maintaining air superiority**. Air superiority provides a huge advantage across all vectors of combat, delivering freedom from attack, freedom to attack, freedom of action, freedom of access, and freedom of awareness. Owning the airspace in a combat zone allows for larger windows for aggressive, precision airstrikes.

## *WHAT IS THE NGAD FIGHTER?*

*Next Generation Air Dominance (NGAD)* ***refers both to a fighter jet, as well as a family of systems designed to operate without a threat of attack****, even in crowded combat air space. It was revealed that a prototype NGAD was built and flown in September 2020. Once the fighter is approved for production, the aim is for the NGAD to eventually replace the F-22 Raptor.*

Above: An illustration of the expanded cross-section of a Lockheed SR-71. Right, top and bottom: What could the future of fighters look like? There are many challenges and unknowns to work out.



06

# WHEN DO EXPERTS THINK THE WORLD MIGHT SEE SEVENTH-GEN JETS?

*Considering sixth-generation fighter jets haven't even gone into production yet, it might not be until the **2070s** that we see a seventh-generation fighter jet. Many factors play a role in how long it takes everyone to align on the best step forward for each new generation of fighter jets.*

---

It might not be until the 2070s that the world sees a seventh-generation fighter jet.

15
10
5
-5
-10
-15
N-X-211
RYAN
NYP
NX-211

The Spirit of St. Louis—a custom-built, single-seat monoplane—was piloted by Charles Lindbergh.

Spirit of St. Louis

# 7

# AMERICAN HEROES

## THE GREATEST PILOTS AND PIONEERS IN U.S. AVIATION HISTORY

COCHRAN
THIS AIRCRAFT CONTAINS A CANOPY
REMOVER CONTAINING AN EXPLOSIVE
CHARGE SEE T.O. 30-1139A-2
FOR COMPLETE INSTRUCTIONS

T-3

## *WHO WAS JACQUELINE COCHRAN?*

*She became* ***the first woman to ferry a bomber plane overseas in 1941****. Once there, she trained 25 female pilots in aircraft ferrying service in the British Air Transport Auxiliary. In 1943, she became director of the Women Airforce Service Pilots, where she oversaw training at over 100 military bases. She went on to train with Chuck Yeager and eventually became the first woman to break the sound barrier in 1953.*

### 2. WHO WAS JIMMY DOOLITTLE?

James "Jimmy" Harold Doolittle was an **American army general who earned a Medal of Honor for leading a raid on Tokyo during World War II**. It was a direct retaliation for Pearl Harbor and the first American air operation to strike Japan. All of this took place after an early career pushing aviation to new limits, from setting a record for flying the fastest seaplane in 1925 to becoming president of the Institute of Aeronautical Sciences in 1940.

### 3. WHO WAS CHUCK YEAGER?

Brigadier Gen. Charles E. "Chuck" Yeager was the **director of Aerospace Safety for the Air Force Inspection and Safety Center**. He shot down 13 enemy aircraft in World War II. Even when he was shot down over German-occupied France, he evaded capture. On Oct. 14, 1947, he made world history by becoming the first man to fly faster than the speed of sound. He flew more than 10,000 hours in more than 361 different makes and models of military aircraft.

Left, top and bottom: American pilot Jacqueline Cochran accomplished a lot of firsts as a woman pilot. Above: Gen. Jimmy Doolittle of the U.S. Army Air Forces.

### 4. WHO WAS CHARLES LINDBERGH?

He is **best known for completing the first solo transatlantic flight**, flying a custom-built monoplane named The Spirit of St. Louis from Long Island, New York, to Paris, France, in 1927. During World War II, Lindbergh served as an advisor to the U.S. Navy and Army, helping devise a way to give the P-38 two extra hours of flight time by limiting the RPMs and increasing manifold pressure. The procedure greatly increased the combat radius of the P-38 and made the jet more effective on long-range missions.

## WHO WAS CAPT. DAVID McCAMPBELL?

*He was* ***the top Naval ace of World War II****. McCampbell was promoted to commander in 1944 aboard the USS* Essex*, leading the ship's Air Group 15. During the infamous Battle of Leyte Gulf, McCampbell set a U.S. single-mission combat record by shooting down nine Japanese aircraft. The destroyer USS* McCampbell *was named in his honor.*

David McCampbell was a top Naval ace during World War II who set a U.S. single-mission combat record by shooting down nine Japanese aircraft.

PUSH
LOSURE
LEASE

## WHO WAS AMELIA EARHART?

*She was* ***the first woman to fly solo across the Atlantic****, completing a 15-hour voyage from Harbour Grace, Newfoundland, to Culmore, Northern Ireland. She then completed a solo flight from Honolulu, Hawaii, to Oakland, California, making her the first person to fly across any part of the Pacific. Earhart is believed to have died in a mysterious crash while attempting to fly around the world along the equator.*

### 7. WHO WAS MAJOR RICHARD BONG?

Maj. Bong **earned the nickname "Ace of Aces" by destroying 40 enemy aircraft in aerial combat during World War II**. He received the Medal of Honor from Gen. Douglas MacArthur for his incredible feats. Bong regularly credited his success to his unique, and dangerous, strategy: fly as close to the target as possible to minimize the chances of missing.

### 8. WHO WAS GEORGE S. WELCH?

He was **one of the few pilots able to take off during the attack on Pearl Harbor**, and he's known to have shot down at least four Japanese planes on Dec. 7, 1941. He was not awarded a Medal of Honor on a technicality: The U.S. and Japan were not at war at the time of his kills and he took off without official orders. But Welch did earn the Distinguished Service Cross, the second highest military decoration for a member of the Army.

Left: A portrait of Amelia Earhart in July 1936, one year before she and her navigator Fred Noonan went missing over the Pacific. Their remains were never found. Above: Maj. Richard Bong, the "Ace of Aces."

# WHO WAS EDDIE RICKENBACKER?

*Capt. Edward "Eddie" Vernon Rickenbacker* ***finished WWI with an America-leading 26 confirmed enemy kills****. A race car driver with no combat experience, he was originally turned down for enlistment. He won a Medal of Honor and eight Distinguished Service Crosses. When he returned home, he became president of the Indianapolis Speedway before building Eastern Airlines into a successful commercial airline.*

Eddie Rickenbacker was a race car driver who was originally turned down for enlistment.

15
10
5
-5
-10
-15
113
NG
CVW-9
NAVY
VF 211

▲ The F-14 is nicknamed Tomcat, in line with other Grumman aircraft Wildcat, Hellcat, and Tigercat.

113
USS NIMITZ

# WHAT’S IN A NAME?

## CAN YOU IDENTIFY THESE JETS BY THEIR NICKNAME?

# WHAT'S A PHANTOM II?

*Sometimes the sequel is better than the original. McDonnell originally produced the FH-1 Phantom, the first fighter jet for the U.S. Navy and Marine Corps, from 1947 to 1954. When the* ***F-4*** *entered service with the Navy in 1961, they kept it simple by naming it the Phantom II. Over 5,000 Phantom IIs were produced before production shut down for good in 1979.*

### 1. WHAT'S AN EAGLE?

The **McDonnell Douglas F-15** was designed to take over the skies. The all-weather, tactical fighter boasted first-in-class maneuverability, acceleration, range, and weapons. All of these characteristics were aligned with a real eagle's ability to hunt its prey under any circumstances, making the Eagle nickname a perfect fit for the dominant aircraft. The Eagle was deployed in Operation Desert Storm, Enduring Freedom, Iraqi Freedom, and more.

Top and bottom: The McDonnell Douglas F-4 Phantom II entered service with the Navy in 1961. Over 5,000 of the fighter jets were made.

RESCUE OPPOSITE SIDE
JET
DANGER
INTAKE
216
124

1513
USS CONSTELLATION
NAVY
E
BEST IN THE WEST
312

FU-158
9158
91287
U.S. AIR FORCE
FU-287
U.S. AIR FORCE
91092
FU-092
U.S. AIR FORCE
113005
FU-005

## *WHAT'S A SABRE?*

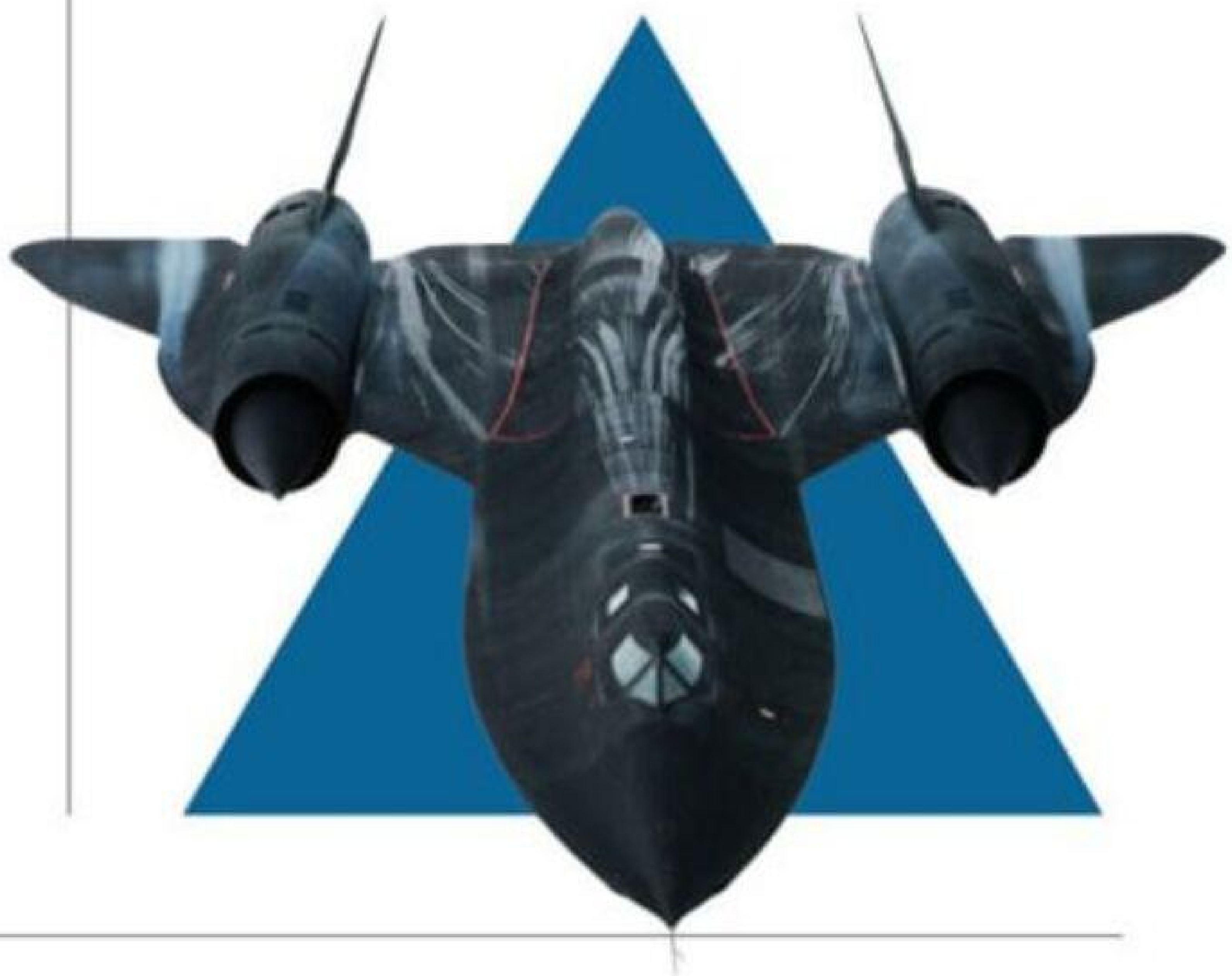
*The **F-86** first became operational in 1949. The first crew to fly the F-86 held a naming competition with 78 entries. The name Sabre emerged victorious. The F-86 was the first swept-wing fighter jet used by the Air Force and the first American-made jet with an ejector seat.*

### 4. WHAT'S A BLACKBIRD?

The **Lockheed SR-71** earned the nickname Blackbird for its matte black paint job. It's a long-range, advanced, strategic reconnaissance jet that stemmed from advancements made to the Lockheed A-12 and YF-12A. The Blackbird is known for its distinct ability to survey massive plots of land—from 80,000 feet, it could survey 100,000 square miles of the Earth's surface per hour.

### 5. WHAT'S A HARRIER?

A harrier is a small bird of prey and a breed of hunting dog, and the AV-8B is a quick and versatile jet that can thrive on multiple types of missions. The **AV-8B** is the second generation of the Harrier jet, so it's known as the Harrier II. It's known as a jumper jet capable of vertical short-takeoff-and-landing. The U.S. Marine Corps received the first Harrier II Plus in 1993, with the last being manufactured in 2003.



Left: The first crew to fly the F-86 got to name the fighter through a competition. The name Sabre won out of 78 entries. Above: The SR-71 Blackbird strategic reconnaissance jet was named for its black paint job.

FC-787
YF-102A

### **6. WHAT'S A DELTA DAGGER?**

The **Convair F-102** actually has two nicknames. While officially nicknamed the Delta Dagger, it was more commonly referred to as The Deuce by its aircrew. Going into service in 1954, pilots referred to the "2" in F-102 as The Deuce and the nickname stuck. The Deuce was used in Vietnam primarily to serve as bomber escorts.

### **7. WHAT'S A RAPTOR?**

The **Lockheed Martin F-22** features a sleek design that emphasizes angles across its fuselage. The jet's sharp edges combine with a high-mounted canopy to evoke the look of a Velociraptor's head. But it's not just the jet's looks. The F-22 is known for its stealth capabilities, allowing it to catch enemies off-guard, much like the Velociraptor was known to hunt its prey.

## *WHAT'S A TOMCAT?*

*The Grumman Aircraft Engineering Corporation followed a tradition of naming their aircraft after cats. During development of the **F-14**, Navy Vice Adm. Thomas F. Connolly was involved in overseeing the jet's features, so the crew started referring to the plane as "Tom's Cat." The name was then shortened to fall in line with previous Grumman aircraft such as the Wildcat, Hellcat, and Tigercat.*

Above: The F-102A Delta Dagger was also known by its crew as The Deuce. Right, top and bottom: The "Tom" in Tomcat refers to Navy Vice Adm. Thomas F. Connolly, who was involved in overseeing the jet's features.

LCDR PAUL BERNADO
"RANCHO"
LCDR KURT FRANKENBERGER
"WEBSTUR"
102
ATAN MULHOLLAND
LANCASTER, OH.

NG
100

07
RESCUE
DANGER
INTAKE

# *WHAT'S A SKYHAWK?*

*The* ***Douglas A-4*** *was officially named the Skyhawk, but earned another moniker due to its capabilities in combat: Scooter. The A-4 was a relatively small fighter jet and thus possessed extremely agile maneuverability in tight and crowded spaces. The Scooter was relatively affordable, under $1 million per jet, and flew in battles ranging from those during the Vietnam War to Desert Storm.*

The Douglas A-4 Skyhawk was also known as the Scooter for its extremely agile maneuverability.

Movies are meant to entertain, so when fighter jets appear onscreen, don't believe everything you see.

15
10
5
-5
-10
-15

# FLIGHTS OF FANTASY

## HOLLYWOOD PORTRAYALS OF FIGHTER JETS OFTEN TAKE LIBERTIES

10

# ARE SIDEWINDERS THE MOST FREQUENTLY USED MISSILE?

*The **AIM-9 sidewinder is the most widely used air-to-air missile**, so Hollywood got that right. In movies, sidewinders are presented as a catch-all for any aerial fire battles, but in reality, they are made for specific tasks. Due to their reliance on infrared guidance, they are most effective from behind their enemies so they can accurately track the engine's heat source to target.*

### 2. ARE THE AFTERBURNERS ALWAYS ON?

Fighter jets in film are constantly shooting massive flames out the back of their engines. It's aesthetically thrilling. The truth is, **real fighter jets use afterburners very sparingly**. When a fighter jet needs a stronger push to launch off an aircraft carrier, to accelerate past Mach 1 or to outrun an enemy, it unleashes the afterburners. But due to the large amount of fuel afterburners consume, they can't be relied upon for sustained use.

### 3. DOES ENGINE FAILURE AUTOMATICALLY MEAN DOOM?

It's obviously not good when an engine fails on a fighter jet, but it's not the death sentence the movies make it out to be. **There are a host of options for pilots to navigate engine failure** before needing to eject. Modern jets come equipped with backups, an emergency electrical power generator, and highly advanced flight control systems.

Left, top and bottom: Sidewinders are considered a short-range missile, which limits their ability to strike when further away from targets. Above: An F-22 Raptor fires up its afterburners, though they're used sparingly.

# ARE DOGFIGHTS COMMON?

*Mano a mano battle royales to determine who has the upper hand is the peak of dramatic tension in movies. Too bad* ***they're almost nonexistent in real aerial combat****. While dogfighting was more common during World War II, because of advances in modern technology, one-on-one short-range fighting now makes no sense. Long-range missiles and radar technology have made close-range combat practically unnecessary in modern combat.*

Movies often amp up the drama with dogfights, but with modern technology, those days are over.

MENU
RESET
RECORDER
REPLY
ICAWS
SMS
CTR
ASGN
FCS
DAS
MAP

LF
770
LF
AF 88 107
LF
AF 88 524
LF
AF 88 153

## *DO FIGHTERS OFTEN FLY IN WINGTIP-TO-WINGTIP FORMATION?*

*As the good guys approach the bad guys for the big final faceoff in mid-air, the good guys are almost always lined up in a tight triangular formation, nearly wingtip-to-wingtip.* ***Not only is that not accurate, it's dangerous for many reasons.*** *Fighter jets are most effective when they are spread out by at least a mile from each other.*

### 6. ARE FIGHTER PILOTS RISK-TAKERS AND MAVERICKS?

Despite the most famous pilot in movie history literally having the name Maverick, real pilots are not hot-headed risk takers and rule breakers. In fact, **the best pilots are known for their discipline and excellent communication skills**. They are the most elite members of military aviation, and they earned it through hard work, preparation, and performance.

### 7. DO SOLO MISSIONS HAPPEN OFTEN?

Despite what the climactic scene in most fighter jet movies tell you, **solo flight missions are extremely rare**. Almost all real flight missions have at least a partner, if not multiple aircrafts, for mutual protection. The term "wingman" is popular for a reason. Solo missions are relied upon exclusively when the threat outweighs the risk and are only undertaken using the most up-to-date tech flown by the most accomplished pilots.

Left: With proper spacing, modern jets can survey more surface area with their radar capabilities. Proper spacing also allows for quick maneuverability when surprised by an enemy attack.

### 8. DOES EVERYTHING ALWAYS HAPPEN AT CLOSE RANGE?

Movie star pilots sometimes get close enough to wink, smile or flip the bird at their foes mid-dogfight, but **close-range aerial combat is a pretty rare occurrence** these days. Due to the incredible advances in aircraft technology, most strikes are conducted beyond visual range. Jets can attack enemies from miles away, rendering close-range combat a risk not worth taking. Modern pilots still train for dogfighting, but only as a backup plan in an emergency situation.

## *DO FIGHTER JETS USUALLY HOVER OVER TARGETS?*

*Many major blockbusters feature fighter jets hovering over their targets. The truth is,* ***hovering over a target is a major tactical disadvantage for the aggressor****. They are left overly exposed and by staying still, fighter jets lose their best attributes, mainly agile maneuverability combined with speed, to avoid counterstrikes.*

From top to bottom: Fighters do not hover over their targets like they do in movies; close-range combat is also rare these days with the advent of long-range missiles.

EDITORIAL DIRECTION BY
**10TEN MEDIA, LLC**

EDITOR-IN-CHIEF
**Vickie An**

CREATIVE DIRECTOR
**Ian Knowles**

MANAGING DIRECTORS
**Bob Der, Scott Gramling**

ART DIRECTOR
**Crhistian Rodriguez**

WRITER
**Paul Ulane**

**McCLATCHY MEDIA**

**ADVERTISING SALES**
**(MAGAZINE & DIGITAL)**

NEW YORK OFFICE
VP, DIRECTOR – EAST COAST
**Megan Pickerelli**

MIDWEST OFFICE/CHICAGOA
VP, DIRECTOR – MIDWEST
**Christopher Svoboda**

WEST COAST/CALIFORNIA OFFICE
VP, DIRECTORS – WEST COAST
**Shelley Fariello**
**Amy Van Etten**

VP, DIRECT ADVERTISING DIRECTOR
**Lorelis Marte**

**MARKETING**
**(MAGAZINE & DIGITAL)**

VP, INTEGRATED MARKETING
**Pamela Madden**

ADVERTISING OPERATIONS DIRECTOR
**Jaime Rabb**

McCLATCHY MEDIA
270 SYLVAN AVE., 3RD FLOOR,A
ENGLEWOOD CLIFFS, NJ 07632A
(800) 749–7733

VP, CONTENT
**Amanda Dameron**

SENIOR DIRECTOR, SPECIAL INTEREST PUBLICATIONS
**Tom Maloney**

DIRECTORS, SPECIAL INTEREST PUBLICATIONS
**Holly Oakes,**
**Melanie Piselli**

VP, PUBLISHING SERVICES & PRODUCTION
**Jacqui LaMorte**

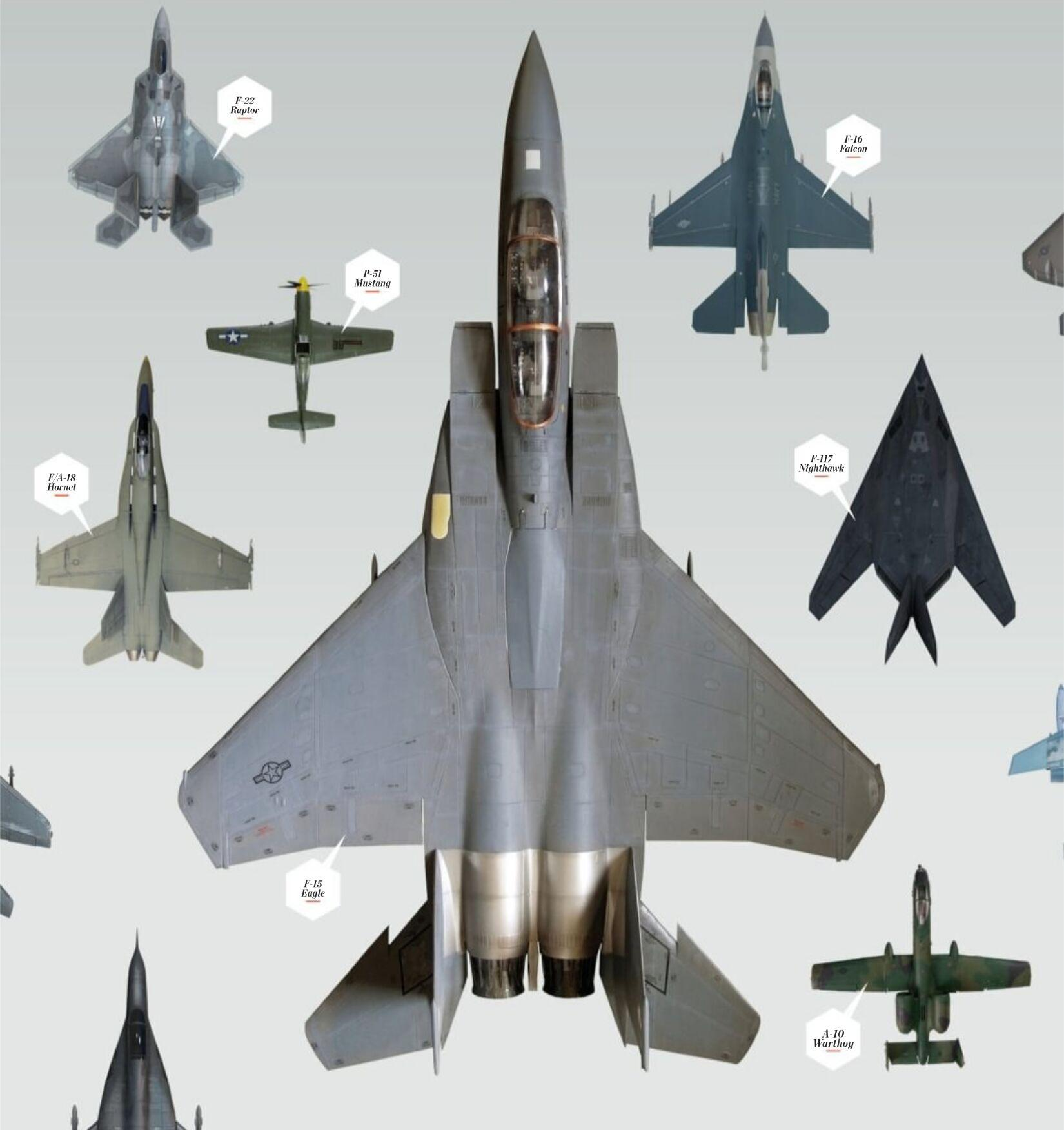
Published by McClatchy Media. All rights reserved. Reproduction in whole or in part without prior permission of the publisher is prohibited. Printed in the U.S.A.

## PHOTO CREDITS

Cover: guvendemir/E+/Getty Images; P2-3: bfk92/E+/Getty Images; P4: PhotoQuest/Getty Images; P5: PhotoQuest/Getty Images; OFF/AFP via Getty Images; Joe McNally/Getty Images; P7: Matthew Lawson/iStock/Getty Images; P8: Bettmann/Getty Images; P10: PhotoQuest/Getty Images; Horace Abrahams/Keystone/Hulton Archive/Getty Images; P11: Keystone/FPG/Hulton Archive/Getty Images; P12-13: Haywood Magee/Picture Post/Hulton Archive/Getty Images; P14: Bettmann/Getty Images; P15: Apic/Getty Images; P16-17: Bettmann/Getty Images; P18-19: Bettmann/Getty Images; P20-21: P. Wallick/ClassicStock/Getty Images; Gary Chalker/Moment/Getty Images; P22: Claude Jacoby/Pix/Michael Ochs Archives/Getty Images; P23: PhotoQuest/Getty Images; P24: Bettmann/Getty Images; P25: PhotoQuest/Getty Images; Stocktrek Images/Getty Images; P26: Bettmann/Getty Images; P28-29: © CORBIS/Corbis via Getty Images; P30: Bettmann/Getty Images; P31: USAF/Getty Images; P32-33: United States Air Force/PhotoQuest/Getty Images; P34: USAF/PhotoQuest/Getty Images; Bettmann/Getty Images; P35: PATRICK BAZ/AFP via Getty Images; P36-37: Bettmann/Getty Images; P38-39: Stocktrek Images/Getty Images; P40: Smith Collection/Gado/Getty Images; P41: Stocktrek Images/Getty Images; P42-43: Richard Perry/Sygma via Getty Images; Stocktrek Images/Getty Images; P44-45: Stocktrek Images/Getty Images; P46: Ramon Van Opdorp/Stocktrek Images; Ramon Van Opdorp/Stocktrek Images; P47: Mai/Getty Images; P48-49: U.S. Navy photo courtesy Lockheed Martin via Getty Images; P50: Philip Wallick/The Image Bank/Getty Images; P51: Jeff J Mitchell/Getty Images; P52-53: CORNELIUS POPPE/NTB/AFP via Getty Images; guvendemir/E+/Getty Images; P54: Jeff J Mitchell/Getty Images; P55: HECTOR RETAMAL/AFP via Getty Images; P56-57: Erik Simonsen/Photodisc/Getty Images; P58-59: ratpack223/iStock/Getty Images; P60-61: jon666/iStock/Getty Images; P62: Joe McNally/Getty Images; P63: brandstaetter images/Hulton Archive/Getty Images; P64: Dorling Kindersley/Getty Images; P65: Devrimb/iStock/Getty Images; Devrimb/iStock/Getty Images; P66-67: yuran-78/iStock/Getty Images; P68-69: Bettmann/Getty Images; P70: Bettmann/Getty Images; Authenticated News International/Archive Photos/Hulton Archive/Getty Images; P71: Bettmann/Getty Images; P72-73: Bettmann/Getty Images; P74: National Archive/Newsmakers; P75: PhotoQuest/Getty Images); P76: Bettmann/Getty Images; P78-79: Dave Baranek/Stocktrek Images/Getty Images; P80-81: Bettmann/Getty Images; Terry Fincher/Getty Images; P82: Bettmann/Getty Images; P83: Greg Mathieson/Mai/Getty Images; P84: Interim Archives/Getty Images; P85: Scott Nelson/Getty Images; Dave Baranek/Stocktrek Images/Getty Images; P86-87: P. Wallick/ClassicStock/Getty Images; P88-89: turbohampster/iStock/Getty Images; P90: BRIAN FLESKE/US NAVY PHOTO/AFP via Getty Images; ERIK KENNEY/US NAVY/AFP via Getty Images; P91: rancho_runner/iStock/Getty Images; P92-93: bbevren/iStock/Getty Images; P94: HIGH-G Productions/Stocktrek Images/Getty Images; P95: magical_light/iStock/Getty Images; P96-97: simonbradfield/E+/Getty Images; Jacob Wackerhausen/iStock/Getty Images; P99: gece33/iStock/Getty Images; Back Cover: Andrew_Howe/iStock/Getty Images (5); freestylephoto/iStock/Getty Images (2)

# AMERICAN FIGHTER JETS

For decades, fighter jets have defined the technological limits of their era. The ongoing race to build the most dynamic and powerful jets continues to influence the most important advancements of the 21st century.


F-22 Raptor
F-16 Falcon
P-51 Mustang
F/A-18 Hornet
F-117 Nighthawk
F-15 Eagle
A-10 Warthog